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10/020,313	12/18/2001	Kazuhisa Fujimoto	HITA.0140	8375

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EXAMINER	
LEROUX, ETIENNE PIERRE	
ART UNIT	**PAPER NUMBER**
2161	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,313	FUJIMOTO, KAZUHISA	
	Examiner	Art Unit	
	Etienne P LeRoux	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *35-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-59* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/3/04 & 4/29/05
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/29/2005 has been entered.

Claim Status

Claims 35-59 are pending; claims 1-34 having been cancelled. Claims 35-59 are rejected as detailed below.

Specification Objection

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The specification does not particularly describe block I/O and file I/O such that the invention can be clearly understood. For purposes of this examination, examiner will rely upon a common dictionary definition[1] which is given below:

block I/O: A collection of consecutive bytes of data that are read from, or written to, a device (such as a disk) as a group.

file I/O: A complete, named collection of information, such as a program, a set of data used by a program, or a user-created document. A file is the basic unit of storage that enables a computer to distinguish one set of information from another. A file is the glue that binds a conglomeration of instructions, numbers, words or images into a coherent unit that a user can retrieve, change, delete save or send to an output device.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 35, 40-42, 47-49 and 54-59 are rejected under 35 U.S.C. 102(e) as being anticipated by Pub No US 2002/0152339 issued to Yamamoto.

Claims 35, 42, 49 and 56:

Yamamoto disclose:

a physical input/output unit coupled to the IP network [Fig 1]

a control unit coupled to the physical input/output port [Fig 1, 43]

a plurality of disk drives coupled to the control unit [Fig 1, 20]

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[1] Microsoft Computer Dictionary, Fifth Dictionary

the physical input/output port being assigned with a first port number for receiving a block I/O request via the IP network and a second port number for receiving a file I/O request via the IP network [claim 1]

wherein the plurality of disk drives are configured into a plurality of volumes, of which a first volume is allocated to store data related to the block I/O request and a second volume is allocated to store data related to the file I/O request [Figs 5 and 6]

wherein the block I/O request includes the first port number and the file I/O request includes the second port number [claim 1]

when an I/O request including the first port number is received, the control unit performs a first operation for storing data in the first volume [paragraph 44]

when an I/O request including the second port number is received, the control unit performs a second operation for storing data in the second volume [paragraph 44]

Claims 40, 47 and 54:

Yamamoto discloses wherein the first volume and the second volume are concurrently allocated [paragraph 44]

Claims 41, 48 and 55:

Yamamoto discloses wherein the control unit maps relationships between the address of each volume and the physical addresses of the disk drive [Fig 4, paragraph 42]

Claim 57:

Yamamoto discloses wherein the first packet has TCP packet in which the first port number is included [paragraph 21]

Claim 58:

Yamamoto discloses wherein the second IP packet encapsulates a TCP packet in which the second port number is included [paragraph 40]

Claim 59:

Yamamoto discloses wherein the control unit transforms the file data into block data for storing in the second volume [paragraph 47]

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 36,5, 40, 42, 47, 49, 54 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pub No US 2002/0112022 issued to Kazar et al (hereafter Kazar) in view of US Pat No 4,825,435 issued to Amundsen et al (hereafter Amundsen) and further in view of Pub No US 2002/0138693 issued to Aasland.

Claims 35, 42, 49 and 56:

Kazar discloses:

a physical input/output port to be coupled to the IP network [Fig 11, paragraph 18]

a control unit coupled to the physical input/output port [Fig 11, 20]

a plurality of disk drives coupled to the control unit [Fig 3]

the physical input/output port receives a block I/O request via the IP network and a second port receives file I/O requests via the IP network [Fig 11, paragraph 17]

Kazar discloses the essential elements of the claimed invention as noted above but does not disclose the physical input/output port being assigned with a first port number for receiving a block I/O request via the IP network and a second port number for receiving a file I/O request via the IP network. Amundsen discloses fiber channel ports and Ethernet channel ports [Fig 4].[2] It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kazar to include the physical input/output port being assigned with a first port number for receiving a block I/O request via the IP network and a second port number for receiving a file I/O request via the IP network based on the teachings of Amundsen for the purpose of making physical connections, such as cable connections to the device.

Furthermore, the combination of Kazar and Amundsen discloses wherein the block I/O request includes the first port number and the file I/O request includes the second port number [Amundsen, Fig 4 as interpreted per the present specification]

Kazar discloses the essential elements of the claimed invention as noted above but does not disclose wherein the plurality of disk drives are configured into a plurality of volumes each of which is designated to store either data related to the block I/O requests or data related to the file I/O request. Aasland discloses wherein the plurality of disk drives are configured into a plurality of volumes each of which is designated to store either data related to the block I/O requests or data related to the file I/O request [Fig 1, 116, paragraph 32]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kazar to include wherein the plurality of disk drives are configured into a plurality of volumes each of which is designated to store either data related to the block I/O requests or data related to the file I/O request as

[2] Fiber channel ports are designated Block data input/output means and Ethernet channel ports are designated file

taught by Aasland for the purpose of storage related data in a designated storage area such that retrieval of the data can be expeditiously performed.

Kazar discloses the essential elements of the claimed invention as noted above but does not disclose when an I/O request including the first port number is received, the control unit performs a first operation for storing data in the first volume and when the I/O request including the second port number is received, the control unit performs a second operation for storing data in the second volume. However, as noted above Amundsen discloses a first port number and a second port number and Aasland discloses storing block data in a first volume and file data in a second volume. It would have been obvious tone of ordinary skill in the at the time the invention was made to modify the combination of Kazar, Amundsen and Aasland to include when an I/O request including the first port number is received, the control unit performs a first operation for storing data in the first volume and when the I/O request including the second port number is received, the control unit performs a second operation for storing data in the second volume for the purpose of storing block data received from the fiber channel port and file data means received from the Ethernet port.

Claim 40:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above and furthermore, Aasland discloses wherein the first volume and the second volume are concurrently allocated [paragraph 35, storage system is optimized].

Claim 47:

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data input/output means per Figure 1 of the present specification

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above and furthermore, Aasland discloses wherein the first volume and the second volume are concurrently allocated [paragraph 35, storage system is optimized].

Claim 54:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 49 as noted above and furthermore, Aasland discloses wherein the first volume and the second volume are concurrently allocated [paragraph 35, storage system is optimized].

Claims 36-39, 43-46, 50-53, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kazar, Amundsen and Aasland and further in view of US Pat No 5,983,270 issued to Abraham et al (hereafter Abraham).

Claim 36:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above but does not disclose wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume. Abraham discloses wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 37:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above but does not disclose wherein the file I/O request has an IP packet that includes the second port number and second information including the file data. Abraham discloses wherein the file I/O request has an IP packet that includes the second port number and second information including the file data [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the file I/O request has an IP packet that includes the second port number and second information including the file data as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 38:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above but does not disclose wherein the bock I/O request has TCP packet in which the first port number is included. Abraham discloses wherein the bock I/O request has TCP packet in which the first port number is included [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the bock I/O request has TCP packet in which the first port number is included as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 39:

The combination of Kazar, Amundsen and Aasland discloses the elements of claims 35 and 36 as noted above but does not disclose wherein the IP packet encapsulates a TCP packet in

which the first port number is included. Abraham discloses wherein the IP packet encapsulates a TCP packet in which the first port number is included [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the IP packet encapsulates a TCP packet in which the first port number is included as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 43:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 42 as noted above but does not disclose wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume. Abraham discloses wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 44:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 42 as noted above but does not disclose wherein the file I/O request has an IP packet that includes the second port number and second information including the file data. Abraham discloses wherein the file I/O request has an IP packet that includes the second port number and second information

including the file data [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the file I/O request has an IP packet that includes the second port number and second information including the file data as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 45:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 42 as noted above but does not disclose wherein the bock I/O request has TCP packet in which the first port number is included. Abraham discloses wherein the bock I/O request has TCP packet in which the first port number is included [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the bock I/O request has TCP packet in which the first port number is included as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 46:

The combination of Kazar, Amundsen and Aasland discloses the elements of claims 42 and 43 as noted above but does not disclose wherein the IP packet encapsulates a TCP packet in which the first port number is included. Abraham discloses wherein the IP packet encapsulates a TCP packet in which the first port number is included [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the IP packet encapsulates a TCP packet in which

the first port number is included as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 50:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 49 as noted above but does not disclose wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume. Abraham discloses wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 51:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 49 as noted above but does not disclose wherein the file I/O request has an IP packet that includes the second port number and second information including the file data. Abraham discloses wherein the file I/O request has an IP packet that includes the second port number and second information including the file data [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the file I/O request has an IP packet that includes the second port number and

second information including the file data as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 52:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above but does not disclose wherein the bock I/O request has TCP packet in which the first port number is included. Abraham discloses wherein the bock I/O request has TCP packet in which the first port number is included [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the bock I/O request has TCP packet in which the first port number is included as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 53:

The combination of Kazar, Amundsen and Aasland discloses the elements of claims 49 and 50 as noted above but does not disclose wherein the IP packet encapsulates a TCP packet in which the first port number is included. Abraham discloses wherein the IP packet encapsulates a TCP packet in which the first port number is included [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the IP packet encapsulates a TCP packet in which the first port number is included as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 57:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 56 as noted above but does not disclose wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume. Abraham discloses wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claim 58:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 56 as noted above but does not disclose wherein the file I/O request has an IP packet that includes the second port number and second information including the file data. Abraham discloses wherein the file I/O request has an IP packet that includes the second port number and second information including the file data [col 47, lines 15-25]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the file I/O request has an IP packet that includes the second port number and second information including the file data as taught by Abraham for the purpose of ensuring that the packet of information was transmitted to the correct destination.

Claims 41, 48, 55 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kazar, Amundsen and Aasland and further in view of US Pat No 6,880,102 issued to Bridge.

Claim 41:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above but does not disclose wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive. Bridge discloses wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive [Fig 4, col 12, lines 36-50]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive as taught by Bridge for the purpose of defining a logical volume such that data can be stored and retrieved from the disk storage system

Claim 48:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 42 as noted above but does not disclose wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive. Bridge discloses wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive [Fig 4, col 12, lines 36-50]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the control unit maps relationships between the address of each volume and physical

addresses of the disk drive as taught by Bridge for the purpose of defining a logical volume such that data can be stored and retrieved from the disk storage system

Claim 55:

The combination of Kazar, Amundsen and Aasland discloses the elements of claim 35 as noted above but does not disclose wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive. Bridge discloses wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive [Fig 4, col 12, lines 36-50]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include wherein the control unit maps relationships between the address of each volume and physical addresses of the disk drive as taught by Bridge for the purpose of defining a logical volume such that data can be stored and retrieved from the disk storage system

Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kazar, Amundsen and Aasland and further in view of US Pat No 6,807,581 issued to Starr et al (hereafter Starr).

Claim 59:

The combination of Kazar, Amundsen and Aasland discloses the essential elements of claim 56 as noted above but does not disclose wherein the control unit transforms the file data into block data for storing in the second volume. Starr discloses in Background to the invention that a network attached storage (NAS) device includes a file system for converting between files and blocks for storage [col 2, lines 5-8]. It would have been obvious to one of ordinary skill in

the art at the time the invention was made to modify the above combination of references to include wherein the control unit transforms the file data into block data for storing in the second volume based on the teachings of Starr for the purpose of storing the file data in an efficient manner such as in blocks which are often distributed across multiple disks in order to increase reliability.

Response to Arguments

Applicant's arguments filed 4/29/2005 have been carefully considered but are moot in view of the new ground(s) of rejection necessitated by applicant's presentation of new claims..

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etienne P LeRoux whose telephone number is (571) 272-4022. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Etienne LeRoux

6/9/2005